In the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application. New material is indicated by an underline, deleted material is indicated by a ~~strikethrough~~.

Listing of claims:

1. (Currently Amended) A method of preparing stable, purely synthetic, self-assembling, controlled release, polyethylene oxide (PEO)-based polymersome vesicles having a semi-permeable, thin-walled, amphiphilic, PEO-based block copolymer encapsulating membrane and at least one active agent encapsulated therein to form at least one encapsulant, the method comprising:

determining the appropriate blend ratio (mol %) of a hydrolysable PEO-based block copolymer ~~of~~ having at least one ~~hydrophilic~~ polyester component, and at least one ~~more hydrophobic~~ inert PEO-based block copolymer ~~component~~ having at least one hydrophobic component, to produce amphiphilic PEO-based polymersomes having a desired controlled release rate of the encapsulated encapsulant based upon the blend ratio;

selecting the at least one ~~hydrolytically degradable, hydrophobic~~ inert PEO-based block copolymer to effect controlled polyester chain hydrolysis in the membrane, such that when combined with ~~hydrophilic~~ the hydrolysable PEO-based block copolymer, the PEO volume fraction (f_{EO}) and chain chemistry control encapsulant release kinetics from the copolymer vesicles, and further control polymersome carrier membrane destabilization; and

blending in aqueous solution the ~~at least one hydrophilic~~ hydrolysable PEO-based block copolymer together with the at least one inert~~, hydrophobic~~ PEO-based block copolymer to effect self-assembly ~~without secondary chemical processing~~ of the amphiphilic PEO-based polymersomes, without the use of a co-solvent, having the desired controlled release rate of the at least one encapsulant contained therein when the encapsulant is released by hydrolysis-driven membrane poration.

2. (Currently Amended) The method of claim 1, wherein the polyethylene oxide component of both the hydrolysable PEO-based block copolymer and the inert PEO-based block copolymer

is polyethylene glycol (PEG).

3. (Cancelled)

4. (Currently Amended) The method of claim ~~3~~ 2, wherein the ~~hydrolytically degradable~~ polyester component of the hydrolysable PEO-based block copolymer comprises a polyester of polylactic acid (PLA) or a polycaprolactone (PCL).

5. (Currently Amended) The method of claim 1, wherein the hydrophobic component of the at least one inert~~, non-hydrophilic~~ PEO-based block copolymer comprises polybutadiene.

6. (Currently Amended) The method of claim 1, wherein the rate of controlled release of the encapsulant upon subsequent hydration of the polymersome is a linear function of an initial (mol %) of the at least one ~~hydrolytically degradable~~ inert PEO- based block copolymer in the blend ratio.

7. (Currently Amended) The method of claim 6, wherein increasing the ~~block~~ f_{EO} increases the rate of transformation into a detergent-like moiety, thereby accelerating destabilization of bilayer morphology of the polymersome membrane and encapsulant release.

8. (Currently Amended) The method of claim 1, further comprising selecting the ~~at least one~~ polyester component of the hydrolysable PEO-based block copolymer for biocompatibility.

9. (Original) The method of claim 1, wherein the at least one encapsulant is an amphiphilic or lipophilic composition.

10. (Previously Presented) The method of claim 1, wherein the at least one encapsulant ranges in molecular weight from 10^2 Da to 10^5 Da.

11. (Currently Amended) The method of claim 1, wherein increasing the molecular weight of the at least one encapsulant decelerates the rate of release from the polymersome carrier.

12. (Currently Amended) The method of claim 9, wherein the at least one encapsulant is a hydrophilic encapsulant encapsulated in the lumen of the polymersome, or the at least one encapsulant is a hydrophilic encapsulant encapsulated by intercalation into the polymersome membrane, or the encapsulant is more than ~~more~~ one encapsulant selected from one or more hydrophilic encapsulants, or one or more hydrophobic encapsulants, or a combination thereof.

13. (Currently Amended) The method of claim 12, wherein at least one hydrophilic encapsulant is selected from the group consisting of carbohydrates, sucrose; marker-tagged dextrans, fluorescent dextrans from 1 kD up to 200 kD; therapeutic compositions, doxorubicin or amphoterican B; dyes; indicators; protein or protein fragments, catalase; ammonium sulfate; salts; and gene, ~~or~~ gene fragments~~,~~ or oligonucleotides.

14. (Previously Presented) The method of claim 12, wherein at least one hydrophobic encapsulant is selected from the group consisting of PKH fluorescent dyes; therapeutic compositions, taxol and anthracyclin; monosialoganglioside; fluorinated lipids; fluorescein-taxol; and fluorescent-dye modified copolymers.

15. (Currently Amended) The method of claim 12, wherein the at least one encapsulant forms a therapeutic composition ~~is~~ that comprises an anti-cancer drug selected from cytotoxic doxorubicin and taxol.

16. (Original) The method of claim 1, wherein the at least one encapsulant is encapsulated simultaneously with polymersome formation, or subsequent thereto.

17-22. (Cancelled)